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Remarks

This Amendment is in response to the Office Action dated January 29, 2002.

With regard to the prior art, Claims 1-12 were rejected as obvious over Maul et al., U.S. patent 6,327,838 (Maul) in view of Shirk et al., U.S. patent 6,056,314 (Shirk). The rejection basically related that Maul shows the claimed subject matter with the exception of the concept of attaching an inflator 90 to a cover by using a ring retaining means. The conclusion was that it would have been obvious to one skilled in the art at the time of the invention to provide Maul with a retaining means as taught by Shirk to have the inflator secured to the cover for more stability.

It should be noted that while Maul is directed to a method and apparatus for folding an air bag, Shirk is directed to the construction of a circular, driver side, air bag inflator. It is not seen how Shirk is relevant to the present invention; it is not related to a folding apparatus. The rejection mentions that "Shirk et al. teach the basic concept of attaching an inflator 90 to a cover 50 by using retaining means 120." The numeral 120 of Shirk, while called a "retainer," it is not a "retainer" for an air bag, it is a "retainer" that is a plate-like structure, which is used to hold or retain his initiator 90 and the inflator within the inflator housing 14.

It cannot be seen where Shirk provides an inflator with more or even less "stability" as it (Shirk) just relates to a method of attaching the initiator of an inflator.

Additionally, if the retainer means 120 of Shirk is to provide greater mechanical stability, then one would expect that the retainer would be formed as a base with the largest possible diameter and as such might then be located on the

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exterior of his housing 14, rather than in a narrow interior bore or passage, which does not seem to have anything to do with "stability."

All of the embodiments of Maul require a plurality of movable pistons and tubes. There are, for example, pistons 10 and 30, which are movable relative to tube 18, as seen in FIGURES 2A - 2F. In that embodiment, the air bag is pushed into Maul's tube 18. In Maul's other embodiment, he utilizes three movable piston-like elements 10, 30 and 40 as shown in Figures 3A-3G in a manner similar to that described in Maul's embodiment in FIGUREs 2A-2F; his cushion is pushed into his outer tube. In the embodiment in FIGUREs 4A-4H, the plurality of movable pistons and tubes continues with the use of pistons 10, 30, 20 and 40. Again, in his last embodiment, there are two opposed pistons 10 and 20. While not particularly relevant to the present invention, Maul's initial embodiment in FIGUREs 1A-1C utilizes movable pistons 10 and 20.

One of the benefits of the present invention is the use of a generally stationary tube analogous to Maul's tube 18 and only a single movable piston, which is not shown or suggested in Maul. With one piston an air bag can be folded directly within a cover. As mentioned, each of the solutions in the prior art shows the use of a plurality of movable members.

In the present invention, the air bag via its housing is secured to the movable piston at or near an accessible end of a folding tube. Thereafter, the single piston is drawn up through the tube, carrying with it the air bag. As the air bag slides relative to the tube it will be pulled lengthwise due to friction. Subsequently, with the air bag cover secured relative to the open end of the folding tube, the

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piston is pushed down the tube, carrying the housing and cushion (air bag) with it. The housing forcefully pushes or presses the air bag into an internal cavity formed on or in the inside surfaces of the cover. This arrangement is neither shown or taught in the prior art.

Additionally, the piston can be arranged to hold a structural element, which is called a "mock inflator" in the patent application, which has the same general structural dimensions as that of an actual inflator (to be used in the air bag module). Consequently, when the air bag is being pushed into the cover the mock inflator will take up space, that is, prevent the air bag material from entering a space or volume that is reserved for the actual inflator. The actual inflator is attached to the air bag housing after the folding process is completed. In the preferred embodiment, the air bag is attached to the housing of the air bag module with the housing attached to the piston. While the housing is attached to the piston, it is used as a ram, pushing the air bag into the cavity of the cover.

In view of the aforementioned, it is respectfully urged that the present application be reconsidered, the claims allowed, and the case passed to issue.

Respectfully submitted,



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Version with Markings to Show Changes Made:

- 1 1. (Amended) A method for installing a cushion and an
2 inflator/horn assembly to a cover having a cavity therein for
3 the cushion, said method comprising the steps of:
4 attaching the cushion to a mock inflator which is
5 fixedly positioned relative to an end of the piston;
6 securing the cover in a preferred orientation;
7 thereafter compacting the cushion into the cover
8 and around said mock inflator by cycling a single piston
9 through one reciprocating movement cycle, such that the
10 cushion is received into a cover cavity defined by the cover;
11 and
12 removing the mock inflator from said cushion,
13 thereby forming a sleeve cavity within the cushion for an
14 inflator/horn assembly.
- 15
- 1 6. (Amended) An assembly for assembling a cushion to a
2 cover, said assembly comprising;
3 a base for supporting the cover;
4 a housing [having an upper platform and a lower
5 platform] defining a generally hollow housing cavity;
6 an air bag housing slidably disposed within said
7 housing cavity; and
8 [a] piston means [movable between said upper
9 platform and said lower platform] for moving the air bag in
10 an up stroke and down stroke within the cavity in a single
11 cycle and for folding the air bag into the cover at the end
12 of the down stroke[; and
13 a mock inflator attached to said piston].

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1 11. (Amended) A method for installing a cushion into an
2 interior cavity of a cover, said method comprising the steps
3 of;

4 forming a cushion subassembly and attaching same to
5 a movable piston, the subassembly including a cushion housing
6 and the cushion;

7 positioning the cover apart from the piston;

8 moving the piston and the attached cushion assembly
9 along a fixed tube in a first direction away from the cover
10 to cause the cushion to expand as it rubs against the inner
11 sides of the tube;

12 moving the piston toward the cover to press the
13 cushion into the cover, thereby folding same and positioning
14 the housing atop the now folded cushion with the interior of
15 the cover.